Appendix A. Glossary

Access control	A means of limiting access by providing either temporary or permanent physical access control barriers, for example, fences, controlled guard gates, and security road blocks. As it applies to this manual, "access control" is defined as any area within Lawrence Livernmore National Laboratory (LLNL) that is defined as private property. This includes all areas within the fence line identified as private property.
Accountable Nuclear Materials	A collective term, which includes all materials designated by the U.S. Department of Energy (DOE), to which the provisions of DOE Order 5633.3B apply.
Approved container	A U.S. Department of Transportation (DOT) container; a DOE-, DOT- or Nuclear Regulatory Commission- (NRC-) approved container with an accompanying Certificate of Compliance; a container designed and constructed according to ASTM standards; a mil-spec container; a container approved for international shipments; or a container approved by LLNL management for use onsite in conjunction with controls specified in this document.
As Low as Reasonably Achievable (ALARA)	A philosophy of protection that controls and maintains exposures to individuals and to the workforce and general public as low as technically and economically feasible below the established limits.
Break-Bulk	Removal of the inner packagings from a combination package of pre-packaged case lots of hazardous materials.
Category	A designation (Category I, II, III, or IV) of a quantity of Special Nuclear Material (SNM) or of an SNM location based on the attractiveness level of the material and the amount of material present. Precise directions for the determination of nuclear material categories are given in **Section 3**.
Category 1 Hazardous Materials	"Controlled Materials" that also fit the definition for hazardous materials in 49 CFR 171.8 (e.g., hazardous classified material, classified waste, non-waste quantities of fissionable and other radioactive materials, accountable nuclear materials, explosives, and nuclear components and special assemblies).
Category 2 Hazardous Materials	Unclassified hazardous materials, substances, and wastes of negligible economic value; i.e., hazardous and radioactive wastes.
Category 3	All hazardous materials and/or substances other than those in Categories 1

Hazardous Materials	and 2.
Category Quantities of Accountable Nuclear Materials (Safeguards Categories I, II, III, and IV)	A category of Nuclear Materials (NM) for the graded safeguards program, prescribed in DOE Order 5633.3B.
Category Quantities of SNM	A categorization of SNM for the graded safeguards program, prescribed in DOE Order 5633.3B.
Certificate of Compliance	A DOE or NRC document that provides certification that a specific packaging design for specified quantities and types of nuclear materials meets the applicable regulatory requirements.
Classes of Sealed Sources (Class I, II, III, and IV	An LLNL hazard classification of sealed sources which takes into consideration total integrated inhalation dose, gamma/neutron dose rate beta dose rate, and contamination control. Sealed sources are classified as per the *LLNL Health and Safety Manual*, Supplement 33.45.
Combination packaging	Packaging that consists of one or more inner packagings secured inside a single, non-bulk outer package.
Communication	Any labeling, marking, placarding, or written information affixed to a hazardous material package, or electronically transmitted, which is used to convey information as to the hazard and contents of the package to package handlers, transport personnel, and emergency responders.
Composite Packaging	Packaging that consists of an inner receptacle and an outer packaging that, when assembled, becomes an integral, single unit, and is filled, stored, shipped, and emptied as such, e.g., 55-gal, 1A2 galvanized drum with a rigid poly liner.
Confirmatory measurement	A measurement made to test whether some attribute or characteristic of nuclear materials is consistent with the expected attribute or characteristic for that material.
Container	The component(s) of the packaging whose function is to retain the package contents during transport.
Containment	Features of the package used to ensure that the material is not released in an uncontrolled manner to the environment during normal transport

operations.

Contractor Any DOE prime contractor or subcontractor subject to the contractual provisions of 48 CFR 970.5204-2 or other specific negotiated provisions indicating the DOE's decision to enforce environmental protection, safety, and health protection requirements.

Control The administrative and/or physical controls applied to the transfer of hazardous materials, substances, and wastes, which serve to mitigate risk during transport.

Controlled access A means of limiting access by providing either temporary or permanent physical access control barriers, e.g., fences, controlled guard gates, and security road blocks. Use of passive barriers, such as signs, are not considered controlled-access. See **Access control**.

Controlled materials Materials that are classified, hazardous, of national interest, or of high monetary value. Several categories of controlled materials have been defined as follows:

- Accountable nuclear materials
- Beryllium and its compounds
- Explosives
- Radioactive materials, including Class II, III, and IV Sealed Sources
- Material contaminated with or containing controlled materials
- Valuable materials such as separated stable isotopes, gems, precious metals, etc.
- Classified parts and material
- Special reactor materials
- Some carcinogens
- Any other material specified by LLNL or the DOE requiring control
- Mock High Explosive.

DOE-approved Approval by the DOE of relief from one or more provisions of the DOT regulations.

DOT-approved Approval by the DOT of relief from one or more provisions of the DOT regulations.

DOT labels The DOT labels specified by 49 CFR 172.400 that indicate the hazard classification associated with the material being transported.

DOT markings Letters indicating the DOT proper shipping name and ID number as

specified in 49 CFR 172.300, Subpart D.

DOT Placards

The DOT placards on vehicles as specified by 49 CFR 172.500 that represent the hazard associated with the material being transported.

Explosive

Any substance or article, including a device, which is designed to function by explosion (i.e., an extremely rapid release of gas and heat) or which, by chemical reaction within itself, is able to function in a similar manner even if not designed to function by explosion, unless the substance or article is otherwise classed under another provision as allowed by DOT.

Explosives in Class 1 are divided into six divisions as follows:

1. ***Division 1.1*** consists of explosives that have a mass explosion hazard. A mass explosion is one which affects almost the entire load instantaneously.
2. ***Division 1.2*** consists of explosives that have a projection hazard but not a mass explosion hazard.
3. ***Division 1.3*** consists of explosives that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but not a mass explosion hazard.
4. ***Division 1.4*** consists of explosives that present a minor explosion hazard. The explosive effects are largely confined to the package, and no projections or fragments of appreciable size or range are to be expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package.
5. ***Division 1.5*** consists of very insensitive explosives. This division is comprised of substances which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.
6. ***Division 1.6*** consists of extremely insensitive articles which do not have a mass explosive hazard. This division is comprised of articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

Facility

Distinct DOE or Contractor buildings, plants, storage areas, laboratories, and test ranges that are fenced or otherwise access-controlled operating areas within the boundaries of a site.

Facility Safety Procedure (FSP)

An LLNL internal procedure documenting hazards within a facility and basic controls and safety ground rules to be followed by all personnel present within a building or area. Facility Safety Procedures are reviewed

every three years.

Fissile material — A material defined as fissile by 49 CFR 173.403 (j), specifically, any material consisting of or containing one or more fissile nuclides. Fissile radionuclides are all plutonium isotopes, uranium-233, and uranium-235. Neither natural or depleted uranium are fissile material.

Hazardous material — All hazardous materials as defined by the DOT Hazardous Materials Regulations, 49 CFR 171.8.

Hazardous substances — All hazardous substances as defined by the DOT Hazardous Materials Regulations, 49 CFR 171.8.

Hazardous waste — All nonradioactive hazardous wastes as defined by the Environmental Protection Agency (EPA) regulations, 40 CFR 115, 116, and 262; and the State of California regulations, Title 22, Chapter 30, Articles 9 and 11.

Labels (and Labeling) — A general term used to describe any label affixed to a package to indicate the hazard associated with the material being transported.

Low Level Waste (LLW) — As defined by DOE Order 5820.2A, waste that contains radioactivity and is not classified as high-level waste, transuranic waste, or spent nuclear fuel or 11e (2) byproduct material as defined by DOE Order 5820.2A. Test specimens of fissionable material irradiated for research and development only, and not for the production of power or plutonium, may be classified as low-level waste, provided the concentration of transuranic is less than 100 nanocuries per gram.

Markings — DOT proper shipping name and identification number and any other information as specified.

Material Safety Data Sheet (MSDS) — Detailed information and data on a particular chemical provided by hazardous material manufacturers. MSDSs describe physical, chemical, and physiological properties, safety and handling procedures, and appropriate emergency responses.

Mixed waste — As defined by DOE Order 5820.2A, waste containing both radioactive and hazardous components as defined by the Atomic Energy Act and the Resource Conservation and Recovery Act (40 CFR 115, 116, and 262), respectively.

Non-routine transfers — Onsite transfers of hazardous materials, substances, and/or wastes, between facilities within the access-controlled boundaries of a site, which are required to meet an “emergency” or unique “one-time” need or where special conditions exist that require deviations from existing approvals.

Nonsewerable wastes — Wastes that exceed site discharge limits and, therefore, cannot be

discharged directly to the sanitary sewer.

NRC-approved Approval by the NRC of relief from one or more provisions of the DOT regulations.

Nuclear materials A collective term which includes all materials designated by DOE to which the provisions of DOE Order 5633.3B apply. At present, these materials are:

- Americum
- Berkelium
- Californium 252
- Curium
- Depleted uranium
- Deuterium
- Enriched uranium
- Lithium-6
- Neptunium 237
- Normal uranium[a]
- Plutonium 238-242
- Plutonium 239-241
- Thorium
- Tritium
- Uranium-233.

Offsite For hazardous materials packaging and transportation activities, or hazardous waste generation, "offsite" is any activity performed outside of the geographically contiguous private property owned by or under the control of LLNL.

Onsite For hazardous materials packaging and transportation activities, or hazardous waste generation, "onsite" is any activity performed within the geographically contiguous private property owned by or under the control of LLNL.

Operational Safety Procedure (OSP) An LLNL internal procedure documenting hazards for a specific activity and basic controls and safety ground rules to be followed by all personnel working on a specific experiment or operation. Operational Safety Procedures are reviewed annually.

Package The package, together with its contents, as presented for transport.

Packaging The assembly of containers and any other components attached thereto, including inner receptacles, absorbent materials, supporting structure, thermal insulation, and supplementary attached equipment.

PARIS The LLNL computer system linking transactions for incoming materials with procurements and accounting.

Personal vehicle A general term used to describe any transport vehicle that is owned or leased by an individual and is operated for the private use of that person.

Placards The DOT placards as specified by 49 CFR 172.500 placed on vehicles to represent the hazard associated with the material being transported.

Protective Services Officer (PSO) An LLNL employee or contractor employee from the Protective Force Division of the Safeguards and Security Department who escorts

uncleared personnel and onsite hazardous material transfers of Accountable Nuclear Materials as part of his or her job description.

Quality Assurance

A system of administrative and technical checks and balances initiated to ensure the specified requirements for an operation are met. The term includes other related terms such as "quality control" and "compliance inspection."

QA Record

A completed document that furnishes evidence of the quality items and/or activities affecting quality as defined in the participant Quality Assurance plans. Also referred to as "Record."

Radioactive material

Any material having a specific activity greater than 0.002 microcuries per gram, as defined by 49 CFR 173.403 (y). Some materials containing a specific activity less than 0.002 microcuries per gram may be treated as radioactive for contamination control purposes.

Radioactive waste

As defined by DOE Order 5820.2A, waste that is solid, liquid, or gaseous material that contains radionuclides regulated under the Atomic Energy Act of 1954, as amended, and is of negligible economic value considering costs of recovery.

Research Quantity (RQU)

A quantity of less than 1 gal of a Category 3 Material to which the requirements of Occupational Safety and Health Administration (OSHA) (29 CFR), and not this manual, apply.

Safeguard Categories of Accountable Nuclear Materials (Safeguards Categories I, II, III, and IV)

A category of SNM for the graded safeguards program, prescribed in DOE Order 5633.3B.

SARP—Safety Analysis Report (Packaging)

A document that provides a comprehensive technical evaluation and review of the design, testing, operational procedures, maintenance procedures, and quality assurance program to demonstrate compliance with the NRC regulatory safety standards, as issued in 10 CFR, Part 71, or the equivalent standards established by the DOE for approving packaging and issuing certificates of compliance.

Sealed source

A radioactive material sealed in a protective container, embedded in plastic or ceramic, or fused on the surface of a metal planchet (small disk). A sealed source may also just be coated with a resin or plastic. Radioactive materials sealed by these methods are not easily dispersed under normal use, nor are they altered chemically or physically through handling or use. Sealed sources are generally used to supply a material

that has a known radiation intensity or a specific type of radiation. Nuclear material (generally for use in test and calibration), which has been packaged to be environmentally and critically safe.

Sealed Sources Classes (Class I, II, III, and IV)

Sealed sources are given a hazard classification that ranges from Class I (low hazard) to Class IV (high hazard). (**Note:** $Q_{(A)}$ values for each radionuclide are given in Table 2 of the *LLNL Health and Safety Manual*, Supplement 33.45.) Sealed sources are classified according to the following table:

$Q_{(A)}$ Value (microcuries)	**Hazard Class**
<0.1	Class I
0.1 to 1.0	Class II
1.0 to 10.0	Class III
>10.0	Class IV

Shipment

Any offsite transportation of hazardous materials, substances or wastes, and includes activities such as package loading, marking and labeling, securing the package on the vehicle, placarding, and preparation of shipping documents in addition to the actual transportation of the load by the carrier.

Site

An area of land that contains a DOE facility or facilities and is either owned or leased by the DOE or the Federal Government. For purposes of this manual, the two sites addressed are the LLNL Site and Site 300.

Source material

Depleted uranium, normal uranium, thorium, or any other material determined, pursuant to the provisions of Section 61 of the Atomic Energy Act of 1954, as amended, to be source material or ores containing one or more of the foregoing materials in such concentration as may be determined by regulation.

Special Nuclear Material (SNM)

Plutonium, uranium-233 or uranium enriched in the isotope-235, and any other material which, pursuant to the provisions of Section 51 of the Atomic Energy Act of 1954, as amended, has been determined to be special nuclear material, but does not include source material; it also includes any material artificially enriched by any of the foregoing, but not including source material.

Transfer

The onsite transportation of hazardous materials, substances, or wastes, which includes such activities as package loading, marking, and labeling, securing the package on the vehicle, placarding, and preparing communication documents as appropriate, in addition to the actual

transportation of the load by the carrier or transporter.

Transport or transportation

The onsite or offsite activity of moving cargo from one point to another utilizing a transport vehicle. Transport can refer to onsite transfer or offsite shipment of hazardous materials, substances, and wastes.

Transuranic (TRU) waste

As defined by DOE Order 5820.2A, waste that without regard to source or form, is contaminated with alpha-emitting transuranium radionuclides with half lives greater than 20 years and concentrations greater than 100 nanocuries per gram at the time of assay.

Type A Packaging

Any packaging that meets the requirements 49 CFR 173.403.

Treatment, Storage, and Distribution Facility (TSDF)

A facility permitted by the Environmental Protection Agency for treatment, storage, and/or distribution of hazardous waste.

Type B Packaging

Any packaging that meets the requirements 49 CFR 173.403.

User vehicles

LLNL and/or government vehicles operated by Laboratory personnel trained and qualified to perform assigned tasks where hazardous materials will be used or consumed by that person or organization. User vehicles include those operated by research personnel.

Waste Accumulation Area (WAA)

An officially designated area where Category 2 Hazardous Materials (hazardous wastes) are stored, for up to 90 days, until they can be picked up for transfer to a Treatment, Storage, and Distribution Facility (TSDF).

Work in progress

Onsite movements of hazardous materials, substances, and wastes which are exempt from the requirements of this manual. Specifically, those transfers within boundaries of a facility, and covered by Operational Safety Procedures, Facility Safety Procedures and/or standards of the OSHA. Also, transfers by a trained and qualified person in the course of performing an assigned task where the material will be used and consumed by that person in the course of completing the task (e.g., painter moving supplies to a job site) and where OSHA standards and/or operating procedures are followed.